


December 3, 2001

## **MEMORANDUM**

TO: Stephen E. West  
Regional Administrator  
Boise Regional Office

FROM: Robert E. Baldwin, Air Quality Engineer EIB   
Boise Regional Office

SUBJECT: T2-000034, Consolidated Concrete Company, Boise, Idaho  
Technical Analysis, Tier II Operating Permit No. 001-00046  
Concrete Batch Plant

### **PURPOSE**

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 404 through 406 (*Rules for the Control of Air Pollution in Idaho*) for Tier II operating permits.

### **PROJECT DESCRIPTION**

This project is for the issuance of a Tier II operating permit (OP) for Consolidated Concrete Company (Consolidated) located in Boise. The facility's emission sources are:

- Aggregate Transfer
- Cement Unloading Baghouse
- Weigh Hopper Loading
- Batch Drop
- Truck Loading
- Active Stockpile
- Inactive Stockpile
- Traffic Unpaved Roads
- Traffic Paved Roads
- Front-end Loader Traffic

### **FACILITY DESCRIPTION**

Consolidated operates a concrete batching facility that initially received a permit to construct on July 25, 1977. For Northern Ada County, the Department of Environmental Quality (DEQ) is currently developing a PM<sub>10</sub> Maintenance Plan to protect air quality and public health. Modeling analysis of Northern Ada County demonstrates potential noncompliance with the ambient air quality standards for PM<sub>10</sub> (particulate matter with an aerodynamic of 10 microns or less). The DEQ Boise Regional Office has identified Consolidated as a facility that can assist DEQ in developing a PM<sub>10</sub> Maintenance Plan by cooperating with DEQ to develop a Tier II OP. Consolidated was identified as a facility which did not have or require an OP, but which has a large quantity of allowable PM<sub>10</sub> emissions that are not subject to permit limitations. According to DEQ's 1995 air emissions inventory, the facility's estimated allowable emissions are 80 tons/year (T/yr). Consolidated's estimated actual emissions of 20 T/yr are considerably less. In this situation, limiting the facility to a level closer to actual emissions with a Tier II OP will assist DEQ in developing a PM<sub>10</sub> Maintenance Plan for Northern Ada County. For consistency with other permitted facilities in Ada County the fugitive emissions had to be limited in the Tier II OP. The concrete batch plant's maximum hourly throughput is 100 cubic yards per hour (100 cy/hr). Electricity is supplied to the facility by the local utility.

## SUMMARY OF EVENTS

DEQ issued a permit to construct for Consolidated on July 25, 1977. On February 29, 2000, DEQ issued a letter to Consolidated requesting assistance in the development of a Tier II OP for the Joplin Road facility. On September 5, 2000, DEQ received an application for a Tier II OP from Consolidated. On October 30, 2000, the application was declared complete.

## DISCUSSION

### 1. Emission Estimates

Consolidated's emissions are both point source and fugitive. The point source emissions are from the baghouse on the cement silo. The fugitive source emissions are from the activities associated with the production of the concrete. The fugitive emissions are reduced from the variable moisture content of the material, the added moisture to the activity, and from activities performed inside various structures. The various activities listed in Compilation of Air Pollutants Emission Factors (AP-42) in the production of concrete are as follows:

Source	lb/yd <sup>3</sup>
• Sand and Aggregate Transfer to Elevated Bins	0.05
• Cement Unloading to Elevated Storage Silo (Pneumatic)	0.07
• Weigh Hopper Loading	0.04
• Truck Loading	0.04
• Vehicle Traffic (Unpaved Roads)	0.02
• Wind Erosion from Sand and Aggregate Storage Piles	0.1
Total	0.32 uncontrolled

Consolidated stated in their application that various activities are performed in the confine of a structure which has a control efficiency associated with that activity. The moisture content of the material used in the production of concrete will aid in the reduction of PM<sub>10</sub> emissions. The addition of moisture or dust suppressants to activities also reduces PM<sub>10</sub> emissions. Emission estimates are provided in the Appendix.

The uncontrolled emissions estimate for PM<sub>10</sub> associated with the production of 250,000 cubic yards during a 12 consecutive month period, is 40 T/yr. When using a conservative control efficiency for the added moisture or dust suppressants and 50 percent activity within a building, the associated emissions for the various activities are reduced to 20 T/yr. The other emissions stated within the Appendix of the permit are the cement silo filter bag emissions. This emissions estimate equates to 0.1 T/yr of PM<sub>10</sub>.

Therefore, the emissions limit for the storage silo baghouse and the fugitive dust generated in the production of concrete are controlled by limiting the total production of the facility to 250,000 cubic yards of concrete per consecutive 12-month period.

### 2. Modeling

The modeling for Consolidated was directed to the only point source (storage silo baghouse). The rest of the facility's emissions are basically associated fugitive emissions generated by the production of concrete. The emission potential needs an enforceable limit to meet the requirements of the Northern Ada County PM<sub>10</sub> Maintenance Plan. The result of the modeled impact of the storage silo baghouse is located within Appendix.

### 3. Area Classification

Consolidated of Ada County, Idaho, is located in AQCR 64. This area is located in the Treasure Valley Airshed and the Northern Ada County nonattainment area for carbon monoxide, and unclassified for PM<sub>10</sub>. Ada County is attainment or unclassifiable for all other federal and state criteria air pollutants (nitrogen oxides, volatile organic compounds, and sulfur oxides). Ada County is located in Zone 11.

4. Facility Classification

The facility is not a major facility as defined in IDAPA 58.01.01.006.55 and IDAPA 58.01.01.008.10. Concrete batch plants are not designated facilities as defined by IDAPA 58.01.01.006.27. Concrete batch plants are not subject to federal New Source Performance Standards or National Emission Standards for Hazardous Air Pollutants regulation. The Standard Industrial Classification code for concrete batch plants is 3273. The Aerometric Information Retrieval System facility classification for this facility is "B" because the uncontrolled potential to emit is less than 100 T/yr.

5. Regulatory Review

This OP is subject to the following permitting requirements:

- |    |                                 |  |
|----|---------------------------------|--|
| a. | <u>IDAPA 58.01.01.401</u>       | Tier II Operating Permit                       |
| b. | <u>IDAPA 58.01.01.403</u>       | Permit Requirements for Tier II Sources        |
| c. | <u>IDAPA 58.01.01.404.01(c)</u> | Opportunity for Public Comment                 |
| d. | <u>IDAPA 58.01.01.404.04</u>    | Authority to Revise or Renew Operating Permits |
| e. | <u>IDAPA 58.01.01.406</u>       | Obligation to Comply                           |
| f. | <u>IDAPA 58.01.01.470</u>       | Permit Application Fees for Tier II Permits    |
| g. | <u>IDAPA 58.01.01.625</u>       | Visible Emission Limitation                    |
| h. | <u>IDAPA 58.01.01.650</u>       | General Rules for the Control of Fugitive Dust |

6. AIRS

**AIRS/AFS FACILITY-WIDE CLASSIFICATION DATA ENTRY FORM**

Air Program Description	SIP	PSD	NESHAP	NSPS	MACT	TITLE V	AREA CLASSIFICATION
							A – Attainment U – Unclassifiable N - Nonattainment
SO <sub>2</sub>	B						U – Unclassifiable
NO <sub>x</sub>	B						U – Unclassifiable
CO	B						N - Nonattainment
PM <sub>10</sub>	B						U – Unclassifiable
PT (Particulate)	B						U – Unclassifiable
VOC	B						U – Unclassifiable
THAP (Total HAPs)							
Other (specify below:)							
(Add additional lines if necessary.)							
VE/FE/FD *	ND	ND	ND	ND	ND	ND	

\* VE/FE/FD (VISIBLE EMISSIONS, FUGITIVE EMISSIONS, AND FUGITIVE DUST) ARE ENTERED FOR COMPLIANCE PURPOSES ONLY AND DO NOT REQUIRE EVALUATION BY THE PERMIT ENGINEER.

**AIRS/AFS CLASSIFICATION CODES:**

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

**FEES**

Fees apply to this facility in accordance with IDAPA 58.01.01.470. The facility is subject to permit application fees for this revised Tier II OP of \$500.

**RECOMMENDATIONS**

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends that DEQ issue a Tier II OP to Consolidated. An opportunity for public comment on the air quality aspects of the Tier II OP was provided in accordance with IDAPA 58.01.01.404.01.c. Staff members have notified the facility in writing of the required Tier II application fee of five hundred dollars (\$500). The permit will be issued upon receipt of the fee.

REB/DPS:ln:cm g:\baldwin\op\12\consolidated tech memo

cc: DEQ State Office  
Boise Regional Office

# APPENDIX

Company Name:	Consolidated Concrete Co.	Engineer:	Robert Baldwin
Permit No.:	001-00046	Date:	19-Sep-01
Project:	STANDARD SPREADSHEET	File:	BATCH.WK4
CONCRETE BATCH PLANTS			

Ton per Year Emission Limit:		21 [-] Tons/yr	
Concrete Batch Plant Information			
Facility Production Capacity:	100 [-] yd u3 /hr		
Maximum Annual Hours of Operation	2,500 [-] hr/yr		
Cement Silo:			
Modeled 1-hr Concentration:	32.08 [-] µg/m u3 , at emission rate of 1 lb/hr		
Baghouse Control Effic.	99.00% %		
Cement Hopper:			
Modeled 1-hr Concentration:	[-] µg/m u3 , at emission rate of 1 lb/hr		
Baghouse Control Effic.	99.00% %		
Generator Set Information			
Generator? (Y/N)	N	1000	
	B		
	A		
	50		
	6.8033		Conversion Factor
	560		1340.7

Background Concentrations				
	1-hr	3-hr	8-hr	24-hr Annual
PM <sub>10</sub> (µg/m <sup>3</sup> )	11400	5130	86	33
CO (ppm)				
SO <sub>2</sub> (ppm)				
SO <sub>4</sub> (µg/m <sup>3</sup> )	543	144		23.5
NO <sub>x</sub> (ppm)				

PERMIT LIMITS TABLE

Non-Attainment Area		Attainment Area		Collocated Attainment Area	
Production Rate:	100 yd u3 /hr	100 yd u3 /hr	2,500 hr/year	100 yd u3 /hr	1,250 hr/year
Operational Schedule:	24.0 hr/day	24.0 hr/day	250,000 yd u3 /yr	24.0 hr/day	125,000 yd u3 /yr
Throughput Limits:	if 40 180m <sup>3</sup> /day	if 40 180m <sup>3</sup> /day	None	if 40 180m <sup>3</sup> /day	None
Limiting Pollutant:	None	None		None	
AIRS Facility Classification	B	B		B	

CO 1-hr Stand minutes/1-hr	2.5-hr Standard hr/3-hr	8-hr Standard hr/8-hr
60.00	3.00	8.00

# **OUTPUT** POTENTIAL TO EXCEED - EMISSIONS ANALYSIS USING AMBIENT AIR QUALITY STANDARDS Attainment/Non-Attainment Areas

Generator			
Permitted Controlled Emission Rates			
Pollutant	PM 10	PM 2.5	PM 2.5
PM 10	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
CO	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
NO <sub>x</sub>	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
SO <sub>2</sub>	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
TOC	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
Concrete Batching Plant Sources			
PM 10	7.0700 lbs/hr	8.838 Tons/yr	8.838 Tons/yr

Potential to Emit:	Uncontrolled	Controlled	Classification
	8.8 Tons/yr	8.8 Tons/yr	PM D10 B

Enforceable Limit:	100 yd a3/hr	2,500 hr/yr
Operational Schedule:	24.0 hr/day	250,000 yd a3/yr
Throughput Limits:	1 f 40 100a3/day	250,000 yd a3/yr
Limiting Pollutant:	None	

## ATTAINMENT/Non-CLASSIFIABLE AREAS

Concrete Batching Plant Sources			
Source	PM Emission Factor [1] 100 a3 Concrete	PM Emission Rate [1] 100 a3 Concrete	PM Emission Rate [1] 100 a3 Concrete
Concrete Batching Plant (Concrete)	0.07	7.0	8.8
Weight Hopper Loading (Concrete)	0.07	7.0	8.8
Total		14.0	17.6

Generator and Concrete Batching Plant Source Emissions			
Pollutant	Generator Emission Factor [1] 100 a3 Concrete	Generator Emission Rate [1] 100 a3 Concrete	Generator Emission Rate [1] 100 a3 Concrete
PM 10	0.00	0.00	0.00
CO	0.00	0.00	0.00
NO <sub>x</sub>	0.00	0.00	0.00
SO <sub>2</sub>	0.00	0.00	0.00
TOC	0.00	0.00	0.00

## Non-Attainment Areas

Generator			
Permitted Controlled Emission Rates			
Pollutant	PM 10	PM 2.5	PM 2.5
PM 10	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
CO	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
NO <sub>x</sub>	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
SO <sub>2</sub>	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
TOC	0.00 lbs/hr	0.00 Tons/yr	0.00 Tons/yr
Concrete Batching Plant Sources			
PM 10	0.1400 lbs/hr	0.175 Tons/yr	0.175 Tons/yr

Potential to Emit:	Uncontrolled	Controlled	Classification
	8.8 Tons/yr	8.8 Tons/yr	PM D10 B

Enforceable Limit:	100 yd a3/hr	2,500 hr/yr
Operational Schedule:	24.0 hr/day	250,000 yd a3/yr
Throughput Limits:	1 f 40 100a3/day	250,000 yd a3/yr
Limiting Pollutant:	None	

Pollutant	Ambient Air Concentrations w/ Background Values (ug/m3)			
	1-hr	3-hr	24-hr	Annual
PM				
PM 410			38	31
CO	11,400	5,130		
NO 46				40
SO 42	543		14	24
TOC				

#### NON-ATTACHMENT AREAS

##### Concrete Batching Plant Sources

Source	PM 2.5 Emissions - Baghouse		PM 10 Emissions - Baghouse		PM 10 Emissions - Conveyer		PM 10 Emissions - Transfer	
	1-hr	3-hr	1-hr	3-hr	1-hr	3-hr	1-hr	3-hr
Concrete	0.07	7.0	8.75	2,900	0.070	0.070	0.070	0.09
Conveyer	0.07	7.0	8.75	2,900	0.070	0.070	0.070	0.09
Transfer								
Total								

##### Generator and Concrete Batching Plant Source Emissions - Non-Attachment Areas

Pollutant	Generator Emissions		Concrete Batching Plant Emissions		Total Emissions		AAQS		Permitted Impacts	
	1-hr	3-hr	1-hr	3-hr	1-hr	3-hr	1-hr	3-hr	1-hr	3-hr
PM 2.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PM 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO 46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SO 42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: 1) TYP calculations include concrete batching plant source emissions

2) CO 1-hr Averaging Period

3) CO 3-hr Averaging Period

4) SO 42 3-hr Averaging Period

\*\* Assumes ambient TSP concentrations exceed NAAQS in PM 10 Non-Attachment Areas

##### Attachment Area - Collocated Units - Calculations

Collocated Ambient Air Quality Standards - Calculations			
(1-hr, 3-hr, 24-hr standards are out in full for collection)			
Pollutant	1-hr	3-hr	24-hr
PM			
PM 10	14,000	2433	31,0076
CO			
NO 46			
SO 42	378.5	110.5	28.25
TOC			

##### Background Concentrations - Attachment/Non-Attachment Areas (ug/m3)

Pollutant	Attachment Areas		Non-Attachment Areas	
	1-hr	3-hr	24-hr	Annual
PM				
PM 10				32.7
CO	11,400	5,130		40
NO 46				40
SO 42	543	14	24	24.3
TOC				



09/19/01  
11:40:32

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

Consolidated Concrete Company

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	0.126000
STACK HEIGHT (M)	=	18.2880
STK INSIDE DIAM (M)	=	0.2682
STK EXIT VELOCITY (M/S)	=	5.8466
STK GAS EXIT TEMP (K)	=	293.1500
AMBIENT AIR TEMP (K)	=	293.1500
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	0.0000
MIN HORIZ BLDG DIM (M)	=	0.0000
MAX HORIZ BLDG DIM (M)	=	0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.000 M\*\*4/S\*\*3; MOM. FLUX = 0.615 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	22.80	0.67	0.56	NO
100.	27.15	1	1.0	1.0	320.0	22.80	26.88	14.01	NO
200.	30.87	3	1.0	1.1	320.0	22.72	23.65	14.09	NO
300.	29.00	3	1.0	1.1	320.0	22.72	34.31	20.37	NO
400.	27.36	4	1.0	1.1	320.0	22.58	29.48	15.32	NO
500.	25.87	4	1.0	1.1	320.0	22.58	36.17	18.34	NO
600.	22.93	4	1.0	1.1	320.0	22.58	42.74	21.25	NO
700.	21.87	5	1.0	1.2	10000.0	22.10	36.79	16.55	NO
800.	20.59	5	1.0	1.2	10000.0	22.10	41.56	18.30	NO
900.	19.05	5	1.0	1.2	10000.0	22.10	46.28	20.00	NO
1000.	18.29	6	1.0	1.4	10000.0	21.66	33.90	13.99	NO
1100.	18.08	6	1.0	1.4	10000.0	21.66	36.98	14.85	NO
1200.	17.66	6	1.0	1.4	10000.0	21.66	40.03	15.69	NO
1300.	17.11	6	1.0	1.4	10000.0	21.66	43.05	16.50	NO
1400.	16.48	6	1.0	1.4	10000.0	21.66	46.06	17.29	NO
1500.	15.82	6	1.0	1.4	10000.0	21.66	49.04	18.06	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:  
231. 32.01 3 1.0 1.1 320.0 22.72 27.11 16.12 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\* INVERSION BREAK-UP FUMIGATION CALC. \*\*\*

CONC (UG/M\*\*3) = 0.000

DIST TO MAX (M) = 100.00

DIST TO MAX IS < 2000. M. CONC SET = 0.0

\*\*\*\*\*

\*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*

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CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	32.01	231.	0.